Wisconsin
Department of Commerce

Evaluation # 200254-W Revised
(Replaces 200001-W)

Safety & Buildings Division
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Wisconsin
Building Products Evaluation

(Incomplete text available electronically, contact dept.for complete copy)

Material	Steel Transfer Plated Columm
Manufacturer	Jack Walters & Sons Corporation 6600 Midlane Court Allenton, WI 53002

SCOPE OF EVALUATION

GENERAL: This report evaluates the Steel Transfer Plated (STP) Columns, manufactured by Jack Walters and Sons Corporation, assembled with *Woodclaw Truss Plate metal connectors, also manufactured by Jack Walters and Sons Corporation.

This review includes the cited **International Building Code (IBC)** requirements below in accordance with the current **Wisconsin Code** for commercial and multi-family dwellings**:**

- **Allowable Stress Design:** The 16- and 20-gauge Woodclaw metal truss plate connectors were evaluated for use within allowable design values in accordance with **s. IBC 2306.1** and **s. IBC 2308.10.7.1**. (see *Woodclaw Truss Plate Product Approval Number 200253-N)
- **Wood Columns:** The wood used as a component of the Steel Transfer Plated (STP) Columns is Southern Yellow Pine of Grade No. 2 or better, evaluated in accordance with **s. IBC 2303.1, 2303.1.1, 2304.11.2.6**, **2304.11.4.1** and **s. 602.4.1**.
- **Preservative-treated Wood:** Lower portions of the Steel Transfer Plated (STP) Columns are pressure-treated lumber in accordance with **s. IBC 2303.1.8** and shall be identified in accordance with **s. IBC 2303.1.8.1**.

DESCRIPTION AND USE

The Steel Transfer Plated Column is an assembly of **three** laminates of 2 x 6's, 2 x 8's, 2 x 10's or 2 x 12's, 12 feet long, of Southern Yellow Pine of grade No. 2 or better and *metal connector plates, yielding a nominal 6- x 6-inch column. The column of sawn dimensional lumber is bonded together on the wide face using metal connector plates. Additionally, the lumber is spliced end-to-end with metal connector plates such that the lower portion is pressure-treated lumber, and the other end is untreated lumber. Pressure-treated lumber is attached to untreated lumber in

staggered splices. The location of splices in a three-ply column is such that the second splice is 24 inches above the shortest treated member and the third splice is 48 inches above the shortest treated member. The spliced lumber is bonded together with 20 gauge *Woodclaw G60 galvanized steel transfer plates:

- Exterior connector plates are *Woodclaw 20 gauge plates punched with a four tooth plug yielding a plug 1-inch on center;
- Interior transfer plates fastened to the untreated portion of the column are 20 gauge G60 galvanized steel with the same steel specifications as the *Woodclaw connector plates;
- In the treated portion of the column below grade, the transfer plates are 20 gauge ASTM 432B stainless steel in accordance with **s. IBC 2304.9.5**.

All transfer plates are punched with a four-tooth plug on 2-inch centers alternatively in each direction.

TEST RESULTS

Static bending tests were conducted in accordance with "Static Tests of Timbers in Structural Sizes", ASTM D198, to establish design values for bending strength and bending modulus of elasticity for the Steel Transfer Plated Column. Tests were preformed by PFS Corporation, Report #86-61, in 1987, Madison, WI 53704.

Test Results:	**#1 Grade**	**#2 Grade**
Average Ultimate Load (lb)	12,314	8,252
Average Deflection at 8,000 lb. Live Load (in.)	1.592	N/A
Average Deflection at 6,000 lb. Live Load (in.)	N/A	1.410
Average Modulus of Rupture (psi)	5,336	3,577
Standard Deviation (psi)	743	714
Average Apparent Modulus of Elasticity (10^6 psi)	1.466	1.256
Standard Deviation (10^6 psi)	0.168	0.144
Average Moisture Content Untreated Wood (%)	11.7	13.5
Average Moisture Content CCA Treated Wood (%)	13.8	18.3

Ultimate load and deflection data: **5 x 6 STP Columns:**

DESIGN STRESSES (ALLOWABLE) PSI

	F_b	F_T	F_V	F_C	E
#2 Southern Yellow Pine	1150	625	90	1000	1.25×10^6
#1 Southern Yellow Pine	1700	975	90	1250	1.5×10^6

The design bending strength (based upon a lower 5% exclusion limit strength) is calculated as follows (2 , 3, 5):

$$F = (f - 1.645s) / 2.1$$

where:
- f is the average ultimate modulus of rupture,
- s is the standard deviation of the moduli of rupture data, and
- 2.1 is the applicable factor of safety.

SUMMARY: The resulting design loads for each grade of 6 x 6 laminated post as compared to the design values for untreated structural Southern Yellow Pine 2 x 6's (4) are as follows:

GRADE	**STP COLUMN**		**NOMINAL 2 x 6**		
	Modulus of Rupture	**Modulus of Elasticity**	**Design Bending Strength Single**	**Repetitive**	**Modulus of Elasticity**
#1 SP	1958 psi	1.466×10^6psi	1450 psi	1700 psi	1.700×10^6psi
#2 SP	1144 psi	1.256×10^6psi	1200 psi	1400 psi	1.600×10^6psi

The above table indicates that STP columns of No. 1 Southern Yellow Pine may be assigned a design bending strength equivalent to a solid column of No. 1 Southern Yellow Pine, but with a reduced Modulus of Elasticity. The

design strength and stiffness of the No. 2 Southern Yellow Pine STP column are both reduced compared to No. 2 structural Southern Yellow Pine.

The galvanized steel meets the requirements of ASTM A446 and ASTM A525 standards. Minimum steel yield point is 33,000 psi, minimum steel ultimate strength is 45,000 psi.

STP COLUMN: Assembly Drawing

LIMITATIONS OF APPROVAL

The Steel Transfer Plated Column can be used as an alternative to solid-sawn posts used in post-frame buildings.

The Steel Transfer Plated Columns are approved for use in Type V construction. The Steel Transfer Plated Columns are approved for use where Heavy Timber (HT) Type IV construction is used in accordance with **s. IBC 602.4** and **602.4.7**. The Steel Transfer Plated Columns are approved for use where Type I and II construction is required, in accordance with **s. IBC 603.1, Exception 17**. **NOTE:** An additional thickness of lumber shall be applied to obtain the minimum nominal 6 x 8 (5 1/2" x 7 1/2" actual) size requirement for columns supporting roofs and nominal 8 x 8 (7 1/2" x 7 1/2" actual) size requirement for columns supporting floors.

Complete structural calculations shall be submitted for each project on a site-by-site basis when the Steel Transfer Plated Columns are used. The column size and lumber grade needed shall be determined by the design load requirements of **Chapter 16**.

The treated lumber shall project at least 8-inches above exposed grade, and at least 1-inch above any concrete floor in contact with the column. The treated Southern Yellow Pine shall bear the appropriate American Lumber Standard Committee (ALSC) agency grade stamp.

The metal connector plates shall be permanently marked for identification. (see Product Approval Number 200253-N)

All columns of this configuration and specification must bear a stamp stating Plated Columns Patent No.4,679,367 in a visible location.

The columns must be installed in accordance with the manufacturer's installation recommendations.

This approval will be valid through December 31, 2007, unless manufacturing modifications are made to the product or a re-examination is deemed necessary by the department. The Wisconsin Building Product Evaluation number must be provided when plans that include this product are submitted for review.

DISCLAIMER

The department is in no way endorsing or advertising this product. This approval addresses only the specified applications for the product and does not waive any code requirement not specified in this document.

Revision Date:
Approval Date: February 3, 2003 By: _____

Lee E. Finley, Jr.
Product & Material Review
Integrated Services Bureau

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